

INITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S):

Fitzgerald et al.

SERIAL NO.:

10/611,739

GROUP NO.:

2818

FILING DATE:

July 1, 2003

EXAMINER:

Dung Anh Le

TITLE:

METHOD OF FABRICATING CMOS INVERTER AND

INTEGRATED CIRCUITS UTILIZING STRAINED SILICON

SURFACE CHANNEL MOSFETS

Mail Stop Amendment Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicants hereby make of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the aboveidentified patent application. In accordance with the U.S. Patent Office's partial waiver of the requirement under 37 C.F.R. 1.98(a)(2)(i), only copies of the foreign patent documents and non-patent publications are enclosed.

REMARKS

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

 (2) after the period defined in (1) but before the mailing date of a final action or a notice of allowance under 37 C.F.R. 1.311, and the requisite Statement is below, OR 		(1)	within three (3) months of the filing date of a national application other than a continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the date of entry of the national stage as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the first Office action on the merits, or before the mailing of a first Office action after the filing of a request for continued examination under 37 C.F.R. 1.114; or
the requisite Statement is below, OR	\boxtimes	(2)	after the period defined in (1) but before the mailing date of a final action or a notice of allowance under 37 C.F.R. 1.311, and
/06/2004 AWONDAF1 00000042 10611739	/06/2004 AWONDAF1 (00000042 10	

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\boxtimes	the requisite fee under 37 C.F.R. 1.17(p), namely \$180.00, is included herein, or
(3)	after the mailing date of a final action or notice of allowance but before the payment of the issue fee, AND
	the requisite Statement is below, AND
	the requisite petition fee under 37 C.F.R. 1.17(p), namely \$180.00 is included herein.

It is respectfully requested that each of the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

In addition, Applicants wish to inform the Examiner about the following co-pending patent application, including the Office actions issued therein:

1) 10/625,018, filed on July 23, 2003, by Fitzgerald et al.

Applicants believe that no additional fees are due for this paper to be entered and considered, but the Commissioner is hereby authorized to charge Deposit Account No. 20-0531 for any required fees that may be due.

Respectfully submitted,

Date: April 30, 2004

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3059779



INFORMATION DISCLOSURE STATEMENT

ATTORNEY DOCKET NO.: ASC-044C1

APPLICANT(S): Fitzgerald et al.

SERIAL NO.: 10/611,739

FILING DATE: July 1, 2003 GROUP: 2818

EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	Al	2001/0003364	06/14/2001	Sugawara et al.			
	A2	2002/0100942	08/01/2002	Fitzgerald et al.			
	A3	2002/0043660	04/18/2002	Yamazaki et al.			
	A4	2002/0096717	07/25/2002	Chu et al.			
	A5	2002/0123167	09/05/2002	Fitzgerald			
	A6	2002/0123183	09/05/2002	Fitzgerald			
	A7	2002/0123197	09/05/2002	Fitzgerald et al.			
	A8	2002/0125471	09/12/2002	Fitzgerald et al.			
	A9	2002/0125497	09/12/2002	Fitzgerald			
	A10	2002/0140031	10/03/2002	Rim			
	A11	2002/0168864	11/14/2002	Cheng et al.			
	A12	2003/0003679	01/02/2003	Doyle et al.			
	A13	2003/0013323	01/16/2003	Hammond et al.			
	A14	2003/0025131	02/06/2003	Lee et al.			
	A15	2003/0057439	03/27/2003	Fitzgerald			
	A16	4,010,045	03/01/1977	Ruehrwein			
	A17	4,710,788	12/01/1987	Dämbkes et al.			
	A18	4,990,979	02/05/1991	Otto			
	A19	4,994,866	02/01/1991	Awano			
	A20	4,997,776	03/05/1991	Harame et al.			
	A21	5,013,681	05/07/1991	Godbey et al.			

INFORMATION DISCLOSURE STATEMENT

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EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
-·	A22	5,155,571	10/13/1992	Wang et al.			
	A23	5,166,084	11/24/1992	Pfiester			
	A24	5,177,583	01/05/1993	Endo et al.			
	A25	5,202,284	04/13/1993	Kamins et al.			
	A26	5,207,864	05/04/1993	Bhat et al.			
	A27	5,208,182	05/04/1993	Narayan et al.			
	A28	5,212,110	05/18/1993	Pfiester et al.			
	A29	5,221,413	06/22/1993	Brasen et al.			
	A30	5,241,197	08/31/1993	Murakami et al.			
	A31	5,250,445	10/05/1993	Bean et al.			
	A32	5,285,086	02/08/1994	Fitzgerald			
	A33	5,291,439	03/01/1994	Kauffmann et al.			
	A34	5,298,452	03/29/1994	Meyerson			
	A35	5,310,451	05/10/1994	Tejwani et al.			
	A36	5,316,958	05/31/1994	Meyerson		,	
	A37	5,346,848	09/13/1994	Grupen-Shemansky et al.		,	
	A38	5,374,564	12/20/1994	Bruel			
	A39	5,399,522	03/21/1995	Ohori			
	A40	5,413,679	05/09/1995	Godbey		<u> </u>	
	A41	5,426,069	06/20/1995	Selvakumar et al.			
	A42	5,426,316	06/20/1995	Mohammad			
	A43	5,442,205	08/15/1995	Brasen et al.			
	A44	5,461,243	10/24/1995	Ek et al.			
	A45	5,461,250	10/24/1995	Burghartz et al.			-
· · · · · · · · · · · · · · · · · · ·	A46	5,462,883	10/31/1995	Dennard et al.			
EXAMIN	ER	<u> </u>		DATE CONSI	DERED	-	

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EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME		CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	A47	5,476,813	12/19/1995	Naruse			-	
	A48	5,479,033	12/26/1995	Baca et al				
	A49	5,484,664	01/16/1996	Kitahara e	et al.			
	A50	5,523,243	06/04/1996	Mohamm	ad			
	A51	5,523,592	06/04/1996	Nakagawa	a et al.			
	A52	5,534,713	07/09/1996	Ismail et d	al.			
	A53	5,536,361	07/16/1996	Kondo et	al.	 		
	A54	5,540,785	07/30/1996	Dennard e	et al.			
	A55	5,596,527	01/21/1997	Tomioka	et al.			
	A56	5,617,351	04/01/1997	Bertin et a	al.			
	A57	5,630,905	05/20/1997	Lynch et e	al.			
	A58	5,659,187	08/19/1997	Legoues e	et al.			
	A59	5,683,934	11/04/1997	Candelari	a			
	A60	5,698,869	12/16/1997	Yoshimi e	et al.			
	A61	5,714,777	02/03/1998	Ismail et d	al.			
	A62	5,728,623	03/17/1998	Mori				
	A63	5,739,567	04/14/1998	Wong				
	A64	5,759,898	06/02/1998	Ek et al.				
	A65	5,777,347	07/07/1998	Bartelink				
	A66	5,786,612	07/28/1998	Otani et a	il.			
,	A67	5,792,679	08/11/1998	Nakato				
	A68	5,808,344	09/15/1998	Ismail et d	al.			
	A69	5,847,419	12/08/1998	Imai et al				
	A70	5,877,070	03/02/1999	Goesele e	t al.			-
	A71	5,891,769	04/06/1999	Liaw et a	l.			
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INFORMATION DISCLOSURE STATEMENT

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EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME		CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	A72	5,906,708	05/25/1999	Robinson	et al.			<u> </u>
	A73	5,906,951	05/25/1999	Chu et al.				
	A74	5,912,479	06/15/1999	Mori et al	1.			
	A75	5,943,560	08/24/1999	Chang et	al.			
	A76	5,963,817	10/05/1999	Chu et al.				
	A77	5,966,622	10/12/1999	Levine et	al.			
	A78	5,998,807	12/07/1999	Lustig et a	al.			
	A79	6,013,134	01/11/2000	Chu et al.				
	A80	6,033,974	03/07/2000	Henley et	al.			
	A81	6,033,995	03/07/2000	Muller				
	A82	6,058,044	05/02/2000	Sugiura e	t al.			
	A83	6,059,895	05/09/2000	Chu et al.				
	A84	6,074,919	06/13/2000	Gardner e	t al.			
	A85	6,096,590	08/01/2000	Chan et a	I.			
	A86	6,103,559	08/15/2000	Gardner e	t al.			
	A87	6,107,653	08/22/2000	Fitzgerald				
	A88	6,111,267	08/29/2000	Fischer et	al.			
	A89	6,117,750	09/12/2000	Bensahel	et al.			
	A90	6,130,453	10/10/2000	Mei et al.				
	A91	6,133,799	10/17/2000	Favors et	al.			
	A92	6,140,687	10/31/2000	Shimomu	ra <i>et al</i> .			
	A93	6,143,636	11/07/2000	Forbes et	al.			
	A94	6,153,495	11/28/2000	Kub et al.				
	A95	6,154,475	11/28/2000	Soref et a	l.			
	A96	6,160,303	12/12/2000	Fattaruso				
EXAMINER					DATE CONSID	ERED	<u> </u>	I

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EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME		CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	A97	6,162,688	12/19/2000	Gardner e	et al.			
	A98	6,184,111	02/06/2001	Henley et	al.			
	A99	6,191,007	02/20/2001	Matsui et	al.			
	A100	6,191,432	02/20/2001	Sugiyama	et al.			
	A101	6,194,722	02/27/2001	Fiorini et	al.			
	A102	6,204,529	03/20/2001	Lung et a	I.			
	A103	6,207,977	03/27/2001	Augusto				
	A104	6,210,988	04/03/2001	Howe et a	ıl.			
	A105	6,218,677	04/17/2001	Broekaert	;			
	A106	6,232,138	05/15/2001	Fitzgerald	l et al.			
· <u>-</u> .	A107	6,235,567	05/22/2001	Huang				
	A108	6,242,324	06/05/2001	Kub et al.				
	A109	6,249,022	06/19/2001	Lin et al.				
	A110	6,251,755	06/26/2001	Furukawa	et al.			
	A111	6,261,929	07/17/2001	Gehrke et	al.			
	A112	6,266,278	07/24/2001	Harari et	al.			
	A113	6,271,551	08/07/2001	Schmitz e	t al.			
-	A114	6,271,726	08/07/2001	Fransis et	al.			
	A115	6,291,321	09/18/2001	Fitzgeralc	1			
	A116	6,313,016	11/06/2001	Kibbel et	al.			
	A117	6,316,301	11/13/2001	Kant				
	A118	6,323,108	11/27/2001	Kub et al.				
	A119	6,329,063	12/11/2001	Lo et al.	 			
	A120	6,335,546	01/01/2002	Tsuda et e	al.			
	A121	6,339,232	01/15/2002	Takagi				
EXAMIN	NER		· L	DATE CONSIDE	RED			

FORM	PTO – 1	1449			ATTORNEY DOCKET NO.: ASC-044C1						
INFOR	MATIO	N DISCLOSU	RE STATEM	IENT	APPLICANT(S): Fitzgerald et al.						
					SERIAL NO.: 10/611,739						
					FILING DATE: July 1, 2003 GROUP: 2818						
			U.S.	PATEN	TENT DOCUMENTS						
EXAM.		DOCUMENT	DATE	NAME				CLASS	SUB	FILIN	G DATE IF
INIT.		NUMBER							CLASS	APPR	OPRIATE
	A122	6,350,993	02/26/2002	Chu et	al.		_				
	A123	6,368,733	04/09/2002	Nishin	aga						
	A124	6,372,356	04/16/2002	Thornt	on et al.						
	A125	6,399,970	06/04/2002	Kubo é	t al.						
	A126	6,403,975	06/11/2002	Brunne	r et al.						
	A127	6,407,406	06/18/2002	Tezuka	•	;					
	A128	6,420,937	07/16/2002	Akatsu	ka et al.					1	
	A129	6,425,951	07/30/2002	Chu et	al.						
	A130	6,429,061	08/06/2002	Rim							· · · · · · · · · · · · · · · · ·
	A131	6,521,041	02/18/2003	Wu et d	al.			····			
	A132	6,524,935	02/25/2003	Canape	eri <i>et al</i> .						
	A133	6,555,839	04/29/2003	Fitzger	ald						
	A134	6,573,126	06/03/2003	Cheng	et al.			:			
	`A135	6,583,015	06/24/2003	Fitzger	ald <i>et al</i> .	•					
	A136	6,593,191	07/15/2003	Fitzger	ald	<u></u>				05/16	/2001
	A137	6,602,613	08/05/2003	Fitzger	ald	•				01/17	/2001
	A138	6,649,480	11/18/2003	Fitzger	ald <i>et al</i> .			,		06/19	/2001
	A139	6,682,965	01/27/2004	Noguc	ni <i>et al</i> .					03/26	/1998
	<u> </u>		FOREI	GN PAT	ENT DO	CU.	MENTS				
EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTR	Y CLA	SS	SUB CLASS	FILING DATE	ABSTI		ENGLISH LANG (Y/N)
	BI	41 01 167	07/23/1992	DE					N	-	Abstract only
<u> </u>	B2	0 514 018	11/19/1992	ÉP					N		Y
	B3	0 587 520	03/16/1994	EP					N		Y
	B4	0 683 522	11/22/1995	EP					N		Y

DATE CONSIDERED

EXAMINER

INFORMATION DISCLOSURE STATEMENT

ATTORNEY DOCKET NO.: ASC-044C1

APPLICANT(S): Fitzgerald et al.

					SERIAL NO.: 10/611,739					
					FILING DATE: July 1, 2003 GROUP: 2818					
			FOREI	GN PATE	NT DOCU	MENTS				
EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISI LANG (Y/N)	
	B5	0 828 296	03/11/1998	EP				N	Y	
	B6	0 829 908	03/18/1998	EP				N	Y	
-	B7	0 838 858	04/29/1998	EP				N	N	
	B8	1 020 900	07/19/2000	EP				N	Y	
	B9	1 174 928	01/23/2002	EP				N	Y	
	B10	2 701 599	03/21/1995	FR		,		N	Abstract only	
	B11	2 342 777	04/19/2000	GB				Y	Y	
	B12	4-307974	10/30/1992	JP				N	Abstract only	
	B13	5-166724	07/02/1993	J.P				N	Abstract only	
	B14	6-177046	06/24/1994	JΡ				N	Abstract only	
	B15	6-244112	09/02/1994	JP				Y	Y	
	B16	6-252046	09/09/1994	JP				Y	Y	
	B17	7-94420	04/07/1995	JP				N	Abstract only	
	B18	7-106446	04/21/1995	JP				N	Abstract only	
	B19	7-240372	09/12/1995	JP				N	Abstract only	
	B20	10-270685	10/09/1998	JP				N	Y	
	B21	11-233744	08/27/1999	JP				N	Abstract only	
	B22	2000-021783	01/21/2000	JP				N	Y	
	B23	2000-031491	01/28/2000	JP				N	Y	
	B24	2001-319935	11/16/2001	JP				N	Y	
	B25	2002-076334	03/15/2002	JР	-			N	Y	
	B26	2002-164520	06/07/2002	JP				N	Y	

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FORM	PTO -	1449			ATTORNEY DOCKET NO.: ASC-044C1					
INFOR	MATI	ON DISCLOSU	RE STATEN	IENT	APPLICA	NT(S): F	itzgerald <i>et</i>	al.		
					SERIAL NO.: 10/611,739					
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			FOREI	GN PATE	NT DOCU	JMENTS				
EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)	
	B27	2002-289533	10/04/2002	JP				N	Y	
	B28	98/59365	12/30/1998	wo				N	Y	
	B29	99/53539	10/21/1999	wo				N	Y	
	B30	00/48239	08/17/2000	wo				N	Y	
	B31	00/54338	09/14/2000	wo		_		N	Y	
	B32	01/022482	03/29/2001	wo				N	Y	
	B33	01/54202	07/26/2001	wo	1			N	Y	
	B34	01/93338	12/06/2001	wo	1			N	Y	
	B35	01/99169	12/27/2001	wo				N	Y	
	B36	02/13262	02/14/2002	wo	1			N	Y	
	B37	02/15244	02/21/2002	wo				N	Y	
	B38	02/27783	04/04/2002	wo				N	Y	
	B39	02/47168	06/13/2002	wo				N	Y	
	B40	02/071488	09/12/2002	wo				N	Y	
	B41	02/071491	09/12/2002	wo	1			N	Y	
	B42	02/071495	09/12/2002	wo				N	Y	
	B43	02/082514	10/17/2002	wo				N	Y	
			OTHER A	RT, JOURN	IAL ART	ICLES, E	TC.			
EXAM. INIT.	ОТІ	IER DOCUMEN	TS: (Includin	g Author, Tit	le, Date, Re	elevant Pag	es, Place of	Publication)		
	C1	C1 Armstrong <i>et al.</i> , "Design of Si/SiGe Heterojunction Complementary Metal-Oxide-Semiconductor Transistors," IEDM Technical Digest (1995 International Electron Devices Meeting), pp. 761-764.								
	C2	Armstrong, "Technology for SiGe Heterostructure-Based CMOS Devices," PhD Thesis, Massachusetts Institute of Technology, 1999, pp. 1-154.								
·	C3	Augusto <i>et al.</i> , "Proposal for a New Process Flow for the Fabrication of Silicon-Based Complementary MOD-MOSFETs without Ion Implantation," <u>Thin Solid Films</u> , Vol. 294, No. 1-2 (February 15, 1997), pp. 254-258.								
	C4		Barradas et al., "RBS analysis of MBE-grown SiGe/(001) Si heterostructures with thin, high Ge content SiGe channels for HMOS transistors," Modern Physics Letters B, Vol. 15 (2001), abstract.							
	C5	Borenstein <i>et al.</i> the 1999 12th IE 1999), pp. 205-2	EE Internation							
EXAMI	NER				DATE C	ONSIDERI	 ED			

FORM 1	PTO -	1449	ATTORNEY DOCKET NO.: ASC-044C1				
INFORM	MATI	ON DISCLOSURE STATEMENT	APPLICANT(S): Fitzgerald et al.				
			SERIAL NO.: 10/611,739				
			FILING DATE: July 1, 2003 GROUP: 2818				
		OTHER ART, JOUR	NAL ARTICLES, ETC.				
EXAM. INIT.	ОТІ	HER DOCUMENTS: (Including Author, Ti	tle, Date, Relevant Pages, Place of Publication)				
	C6	Bouillon et al., "Search for the optimal chan study," IEEE (1996), pp. 21.2.1-21.2.4.	nel architecture for 0.18/0.12 μm bulk CMOS experimental				
	C7	Bruel et al., "®SMART CUT: A Promising International SOI Conference (October 1995	New SOI Material Technology," Proceedings of the 1995 IEEE), pp. 178-179.				
	C8	Bruel, "Silicon on Insulator Material Technology," <u>Electronic Letters</u> , Vol. 13, No. 14 (July 6, 1995), pp. 1201-1202.					
	C9	Bufler et al., "Hole transport in strained Si1-xGex alloys on Si1-yGey substrates," <u>Journal of Applied Physics</u> , Vol. 84, No. 10 (November 15, 1998), pp. 5597-5602.					
	C10	Burghartz et al., "Microwave Inductors and Capacitors in Standard Multilevel Interconnect Silicon Technology," <u>IEEE Transactions on Microwave Theory and Techniques</u> , Vol. 44, No. 1 (January 1996), pp. 100-104.					
	C11	Canaperi et al., "Preparation of a relaxed Si-Ge layer on an insulator in fabricating high-speed semiconductor devices with strained epitaxial films," International Business Machines Corporation, USA (2002), abstract.					
	C12	Carlin et al., "High Efficiency GaAs-on-Si S 2000 (2000), pp. 1006-1011.	olar Cells with High Voc using Graded Gesi Buffers," IEEE -				
	C13	Chang et al., "Selective Etching of SiGe/Si I (January 1991), pp. 202-204.	Heterostructures," Journal of the Electrochemical Society, No. 1				
	C14		nt in Strained-Si n-MOSFETs Fabricated on SiGe-on-Insulator etters, Vol. 22, No. 7 (July 2001), pp. 321-323.				
	C15	Cheng et al., "Relaxed Silicon-Germanium on Materials, Vol. 30, No. 12 (2001), pp. L37-L	n Insulator Substrate by Layer Transfer," <u>Journal of Electronic</u> 39.				
	C16		SiGe epitaxial layers on Si and misfit dislocation interactions," A, Vol. 12, No. 4 (July/August 1994), pp. 1924-1931.				
	C17		stability of strained Si n- and p-MOSFETs on SiGe virtual Technology B, Vol. 19, No. 6 (Nov/Dec 2001), pp. 2268-2279.				
	C18		ation Densities in Ge on Si Using Graded SiGe Layers and hysics Letters, Vol. 72, Issue 14 (April 6, 1998), pp. 1718-1720.				
	C19	Eaglesham et al., "Dislocation-Free Stranski Vol. 64, No. 16 (April 16, 1990), pp. 1943-1	-Krastanow Growth of Ge on Si(100)," Physical Review Letters, 946.				
	C20		ers with Ethylene Diamine Pyrocatechol for Bonded and Etchback Materials, Vol. 23, No. 6 (June 1994), pp. 493-496.				
	C21						
	C22						
	C23						
	C24		es for III-V integration with Si and high mobility two-dimensional ence Technology, B 10(4) (Jul/August 1992), pp. 1807-1819.				
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